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(12) UK Patent Application (19) GB (11) 2 154 192 A

(43) Application published 4 Sep 1985

(21) Application No 8503827

(22) Date of filing 14 Feb 1985

(30) Priority data

(31) 8403987 (32) 15 Feb 1984 (33) GB

(51) INT CL[4]
B60J 3/02 E05D 11/08

(52) Domestic classification
B7J 63
E2F 110 112 AF

(56) Documents cited
GB 1422368 GB 1395689

(58) Field of search
B7J

(71) Applicant
Bernard Wardle and Company Limited,
Grove Mill, Earby, Colne, Lancashire BB8 6UT

(72) Inventor
Roland Store

(74) Agent and/or Address for Service
Mathisen Macara & Co.,
Lyon House, Lyon Road, Harrow, Middlesex HA1 2ET

# (54) Sun visor mountings

(57) A one piece plastics moulding provides a mounting (19) for a sun visor. The end of a shaft (14), preferably having diametrically opposed flats, is inserted into a bore provided in the moulding. In one predetermined relative disposition of the moulding and the shaft, the flats are adjacent to and a close fit between parallel side walls of the bore so that the shaft and the mounting tend to maintain this disposition. The shaft can, however, be rotated relative to the mounting with the curved part of the shaft then flexing the side walls, which thus grip the shaft to hold the visor in intermediate positions. As the mounting and the shaft again approach a position in which the flats are aligned with the side walls, the inward force provided by the flexing of the side walls tends to snap the mounting into this position, so providing very positive location of the parts in this position.

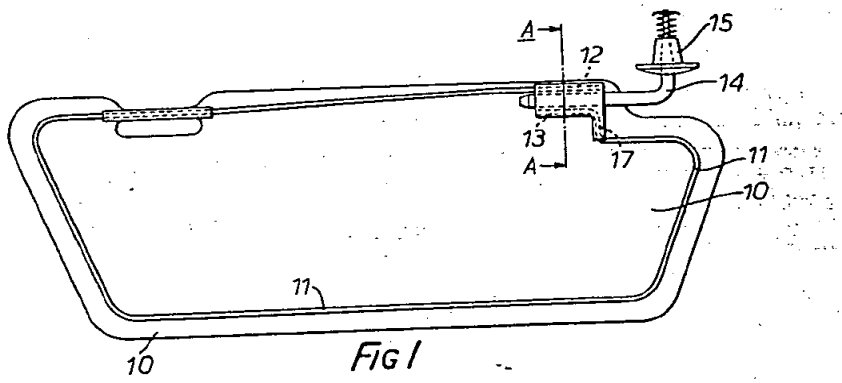


FIG 1

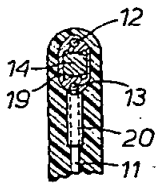


FIG.2.

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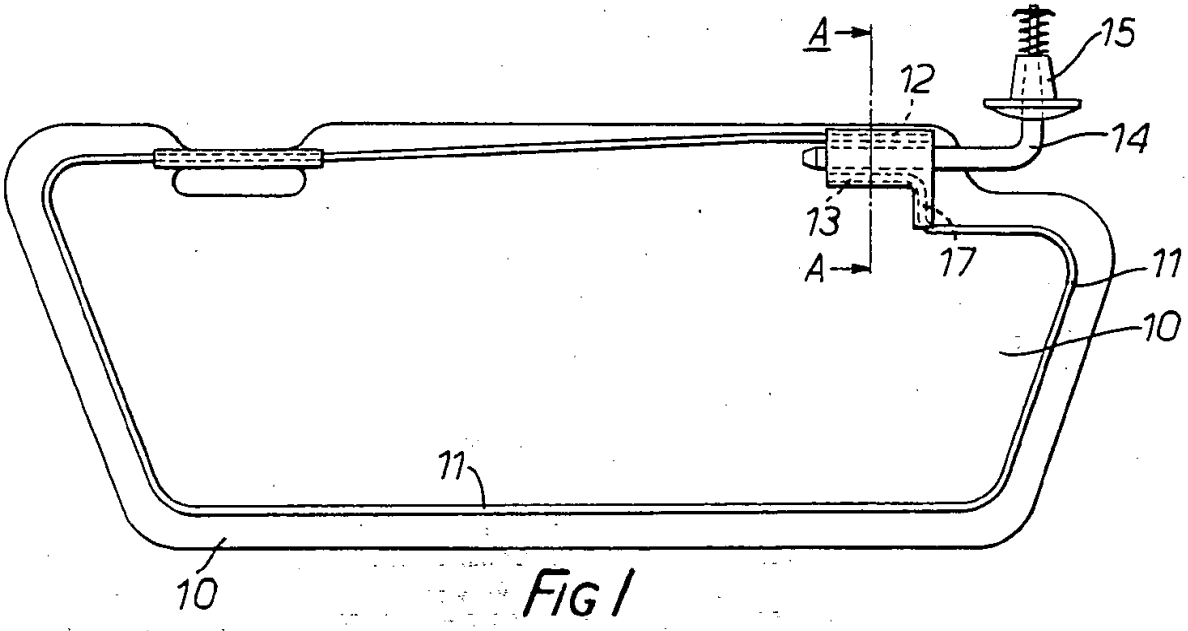


FIG 1

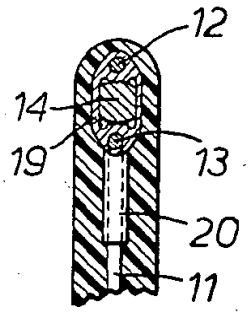


FIG.2.

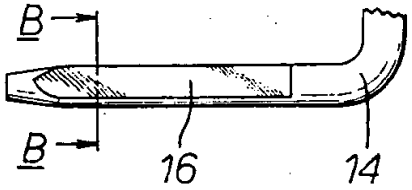


FIG.3.

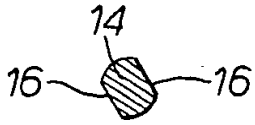


FIG 4

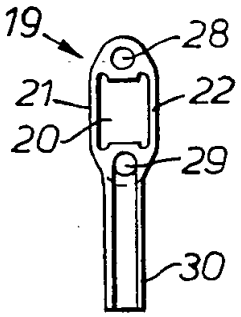


FIG.5.

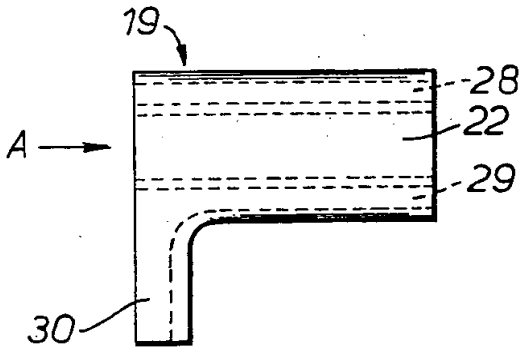


FIG.6.

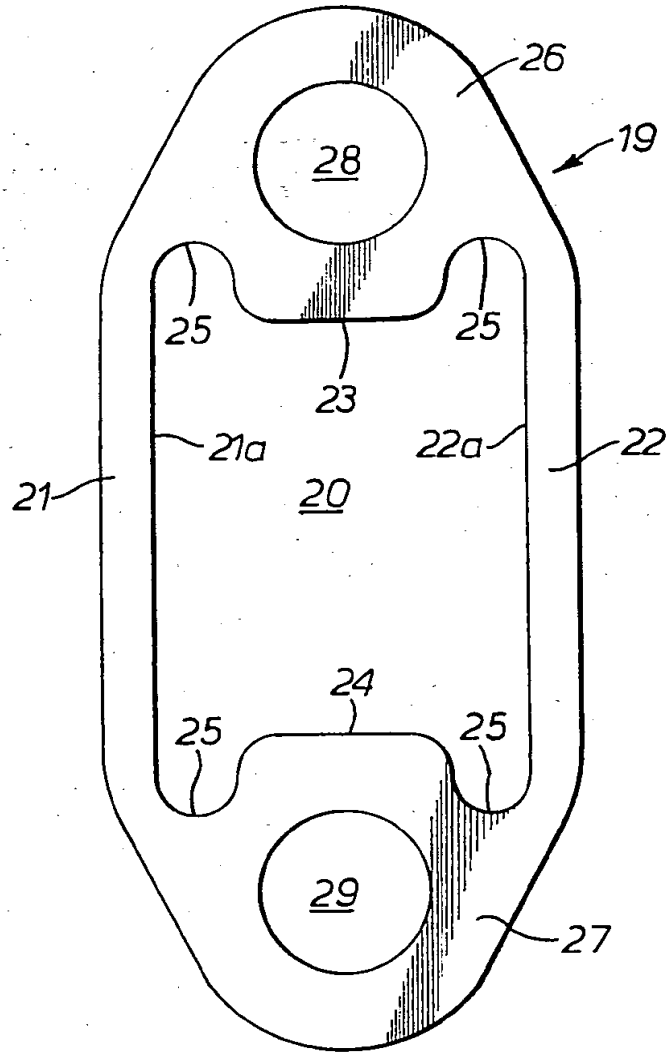


FIG.7.

SPECIFICATION

## Sun Visor Mountings

The invention relates to mountings for sun visors which are supported by a shaft having a mounting-engaging end including at least two diametrically opposed flats.

Such a mounting is required to co-operate with the shaft to hold the visor on the shaft in one or more operative and/or inoperative positions but to allow the visor to be rotated relatively to the shaft between these positions. In addition, the visor must be able to be moved to, and to be held in, positions intermediate the operative and inoperative positions. Previous proposals for such mountings have included metal spring clips which engage the shaft and which are carried on a plate having a bore for receiving and locating the shaft. Such a mounting is formed in a number of parts and is thus complicated and is also expensive to manufacture.

According to a first aspect of the invention, there is provided a mounting for a sun visor supported by a shaft having a mounting-engaging end including at least one flat, and comprising a one-piece plastics member having a bore for receiving the end of the shaft, the bore being defined in part by two side walls whose spacing is substantially the minimum diameter of the shaft end at the said flat or flats so that, when the or a flat is aligned with one of the side walls, the side walls are unstressed by the shaft, hold the shaft and the sun visor in a predetermined relative disposition, and tend to prevent relative rotation of the mounting and the shaft from said disposition, rotation of the mounting relative to the shaft causing the shaft to flex the walls which then grip the shaft until the or a flat comes into alignment with one of the walls when the walls provide a spring force tending to snal the wall and the flat into the aligned position.

According to a second aspect of the invention, there is provided, a sun visor assembly comprising a sun visor and a shaft for supporting the sun visor, the shaft having a visor-engaging end including at least one flat and the visor including a mounting comprising a one piece plastics member having a bore in which the end of the shaft is received, the bore being defined by two side walls whose spacing is substantially the minimum diameter of the shaft end at the said flat or flats so that, when the or a flat is aligned with one of the side

that there are two aligned positions spaced by 180°.

The one piece plastics member may also form top and bottom walls arranged between respective adjacent ends of the side walls, the spacing of the top and bottom walls being substantially the diameter of the shaft.

In this case, the height of the side walls is preferably greater than the spacing between the top and bottom walls, to increase the flexibility of the side walls. There may be channels interconnecting each edge of each side wall and the associated top or bottom wall.

The member may also provide holes for receiving the ends of a wire frame which supports the visor. These holes are preferably parallel to the shaft-receiving bore and are arranged between respective ends of the side walls outwardly of the top and bottom walls.

A channel may be provided extending normal to and leading into one end of one hole for receiving a similarly shaped portion provided at one end of the wire frame.

The following is a more detailed description of one embodiment of the invention, by way of example, reference being made to the accompanying drawings in which:

*Figure 1* is a schematic view of a sun visor showing an interior frame and a mounting, supported by a mounting-engaging end of a shaft,

*Figure 2* is a section on the line A—A of Figure 1,

*Figure 3* is an elevation of a mounting-engaging portion of the shaft of Figure 1,

*Figure 4* is a section on the line B—B of Figure 3,

*Figure 5* is a side elevation of the mounting of Figures 1 to 4,

*Figure 6* is an end elevation of the mounting on the arrow A of Figure 5, and

*Figure 7* is a section on the line III—III of Figure 5, but to a larger scale than Figures 5 and 6.

Referring first to Figures 1 to 4, a sun visor for, for example, a motor vehicle has an outer cover 10 of generally rectangular shape in plan which is filled with a padding material (not shown for clarity) and which is given rigidity by a generally rectangular wire frame 11 whose ends 12, 13 are received within a mounting 19 contained within the outer cover 10. Adjacent one end 13 of the wire frame 11 is a cranked portion 17. The sun visor is supported on a shaft 14 which has one end carrying a connector 15 for connection to, for example, the vehicle and which has the other end received within the mounting and formed with at least two

lon or an acetal plastics material. The mounting comprises a bore 20 defined by side walls 21, 22 and upper and lower walls 23, 24. The inner surfaces 21a, 22a of the side walls 21, 22 are parallel to one another and have a spacing which is substantially equal to the minimum diameter of the shaft end, i.e. the spacing between the flats 16 on the shaft 14, so that when the flats 16 are parallel to these faces, the shaft 14 can just be fitted into the bore 20 without stressing the mounting. The upper and lower walls 23, 24 are spaced apart by a distance which is generally equal to the diameter of the shaft 14 so that, when the flats 16 on the shaft are adjacent the surfaces 21a, 22a of the side walls, the rounded shaft portions between the flats are adjacent the upper and lower walls 23, 24, respectively.

The height of the side walls 21, 22 is greater than the disctance between the upper and lower walls 23, 24, in order to increase the flexibility of the side walls 21, 22. As a result of this, there are channels 25 formed between each edge of each side wall 21, 22 and the adjacent edge of the upper or lower wall 23, 24.

The mounting 19 is provided with thickened portions 26, 27 arranged above and below the upper and lower walls 23, 24 respectively. A hole 28, 29 extends through each thickened portion 26, 27 parallel to the axis of the bore 20. At one end of the lower hole 29, there is formed a depending channel 30 having a depth substantially equal to the diameter of the hole 29 and leading into the hole 29.

It will be appreciated that because the mounting 19 is injection moulded in one piece from a plastics material, it can be produced rapidly and easily at very little cost. The moulding requires no finishing operations before it can be used, is easily stored and will not corrode.

In use, the two ends 12, 13 of the wire frame 11 are inserted in respective ones of the holes 28, 29. The channel 30 accommodates the cranked portion 17 adjacent the end 13. The size of the holes 28, 29 is such that the ends 12, 13 of the wire frame are a tight fit, so that the frame 11 and the mounting 19 are firmly connected. the padding is arranged within an around the frame 11 and the cover 10 is arranged over the padding, the frame and the mounting, with a hole in the cover being aligned with the bore 20 in the mounting. This allows the flattened end of the shaft 14 to be inserted into the bore 20 with the flats 16 aligned with the side walls 21, 22 of the mounting. The connector 15 can then be used to connect the sun visor at an appropriate position in a vehicle.

Because the flats 16 on the shaft are a close fit between the side walls 21, 22 of the mounting, the visor and the shaft are held firmly in a predetermined position relatively to one another, with any tendency to relative rotation being resisted by engagement of the rounded parts of the shafts with the side walls 21, 22. However, by applying an appropriate force, it is possible to rotate the visor on the side walls 21, 22 of the mounting, which will thus hold the visor firmly on the shaft 14 in any position to which it is rotated., If the visor is positioned in the vehicle such that it can be turned through 180°, sufficient rotation of the visor will cause the inwardly directed forces provided by the flexing of the side walls to snap the visor into a position where the flats are again aligned with the side walls of the mounting.

A reverse movement can be performed to snap the visor back into the inoperative position.

Because the mounting 19 is not always flexed, the possibility of the mounting 19 breaking during its life is insignificant, particularly if the mounting is unflexed when in its inoperative position, bearing in mind that, in vehicles, sun visors are generally used for only a small proportion of the time during which the vehicle is being driven. The force applied by the side walls 21, 22 can be adjusted by altering the length, thickness and material of the side walls 21, 22 and it will be appreciated that the length of the side walls can be varied independently of the distance between the upper and lower walls 23, 24.

It will also be appreciated that the shaft 14 may be provided with more than two pairs of diametrically opposed flats 16 to provide a number of positions in which a pair of flats are aligned with the side walls of the mounting. In this way, the mounting might be unstressed when the sun visor is in both the operative and inoperative positions and where these positions are spaced apart by less than 180°.

To increase the resilient deformability of the side walls 21, 22, the mounting may be modified (not shown) by making it open along the upper edge. Thus the upper wall 23 and thickened portion 26 (Figure 7) are removed, and the side walls 21,22 are continued upwards, thinner portions thereof curving upwards and inwards in an arched configuration such that their uppermost edges are separated by a straight, narrow gap. This narrow gap along the upper edge of the visor is widened temporarily in use to allow the side walls 21,22 to flex.

There is then of course no longer any hole 28 for receiving the wire end 12. The wire frame is instead threaded continuously through the mounting, through hole 29 and along channel 30.

The visor could be cut open along the lower edge instead of the upper edge, so that lower wall 24 and thickened portion 27 are removed instead, and the side walls 21,22 continued downwards.

It is preferable, but not necessary, to provide two diametrically-opposed flats on the shaft end. The sun visor may alternatively be held in two or more angularly-spaced positions by providing two flats spaced by an angle of less than 180°. As a further alternative, only one flat may be provided, which, on alignment with each opposed mounting wall, defines two positions for holding the visor, spaced by 180°.

CLAIMS

shaft having a mounting-engaging end including at least one flat, and comprising a one-piece plastics member having a bore for receiving the end of the shaft, the bore being defined in part by two side walls whose spacing is substantially the minimum diameter of the shaft end at the said flat or flats so that, when the or a flat is aligned with one of the side walls, the side walls are unstressed by the shaft, hold the shaft and the sun visor in a predetermined relative disposition, and tend to prevent relative rotation of the mounting and the shaft from said disposition, rotation of the mounting relative to the shaft causing the shaft to flex the walls which then grip the shaft until the or a flat comes into alignment with one of the walls when the walls provide a spring force tending to snap the wall and the flat into the aligned position.

2. A sun visor assembly comprising a sun visor and a shaft for supporting the sun visor, the shaft having a visor-engaging end including at least one flat, and the visor including a mounting comprising a one-piece plastics member having a bore in which the end of the shaft is received, the bore being defined by two side walls whose spacing is substantially the minimum diameter of the shaft end at the said flat or flats so that, when the or a flat is aligned with one of the side walls, the side walls are unstressed by the shaft, hold the shaft and the sun visor in a predetermined relative disposition, and tend to prevent relative rotation of the visor and the shaft from said disposition, rotation of the visor relatively to the shaft causing the shaft to flex the walls which then grip the shaft until the or a flat comes into alignment with one of the walls, when the walls provide a spring force tending to snap the wall and the flat into the aligned position.

3. A mounting according to claim 1, or a sun visor assembly according to claim 2, wherein the shaft has two flats formed thereon, so that there are at least two aligned positions of the mounting relative to the shaft.

4. A mounting, or a sun visor assembly, according to claim 3, wherein the two flats are diametrically opposed, so that there are two aligned positions spaced by 180°.

5. A mounting, or a sun visor assembly, according to any preceding claim, wherein the one-piece plastics member has top and bottom walls arranged between respective adjacent ends of the side walls, the spacing of the top and bottom walls being substantially the diameter of the shaft.

6. A mounting, or a sun visor assembly, according to claim 5, werein the height of the side walls, is greater than the spacing between the top and bottom walls, to increase the flexibility of the side walls.

7. A mounting, or a sun visor assembly, according to claim 6, wherein the one-piece member comprises channels interconnecting each edge of each side wall and the associated top or bottom wall.

8. A mounting, or a sun visor assembly, according to any preceding claim, wherein the one-piece member has holes for receiving the ends of a wire frame for supporting the visor.

9. A mounting, or a sun visor assembly, according to claim 8, wherein the said holes are parallel to the shaft-receiving bore and are arranged between respective ends of the side walls outwardly of the top and bottom walls.

10. A mounting, or a sun visor assembly, according to claim 8 or 9, comprising a channel extending normal to and leading into one end of one hole for receiving a similarly shaped portion provided at one end of the wire frame.

11. A mounting, or a sun visor assembly, according to any of claims 1 to 7, wherein the one-piece member has a hole through which may be threaded a wire frame for supporting the visor.

12. A mounting for a sun visor, substantially as described herein with reference to the accompanying drawings.

13. A sun visor assembly comprising a sun visor and a shaft, substantially as described herein with reference to the accompanying drawings.

Printed in the UK for HMSO, D8818935, 7/85, 7102.
Published by The Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.